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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,442	07/25/2003	Chien-Min Sung	22001	3424

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/627,442	Applicant(s) SUNG, CHIEN-MIN	
	Examiner Michael A. Marcheschi	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 21-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Applicant's election without traverse of group I, claims 1-20 in the reply filed on 10/13/05 is acknowledged.

The disclosure is objected to because of the following informalities, as defined in the previous office action which are incorporated herein by reference.

Claims 1-4 and 6-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite as to the limitation "substantially free of" because the examiner is unclear as to what this encompasses, thus rendering the scope of the claim unclear. The examiner acknowledges that applicant provides a definition of this in the specification (page 7), however, this definition does not clarify what is meant by "substantially free of". The specification defines this as an amount not imparting a measurable effect and the examiner is unclear as to what is meant by measurable. The other claims are indefinite because they depend on this claim.

Claims 18-20 are also indefinite because it is apparent that the 3 devices require other **essential** limitations to define the specific devices not specifically defined in the claims. In other

Art Unit: 1755

words, how can a nanodiamond article define a heat spreader, a surface acoustical wave filter and a radiation window without the inclusion of other **essential** device limitations.

(1) Claims 1-10 and 16-20 are rejected under 35 U.S.C. 103(a) as obvious over Akashi et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

(2) Claims 1-20 are rejected under 35 U.S.C. 103(a) as obvious over Phaal et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

(3) Claims 1-20 are rejected under 35 U.S.C. 103(a) as obvious over Wentorf, Jr. et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

(4) Claims 1, 3-4, 6-10 and 16-20 are rejected under 35 U.S.C. 103(a) as obvious over Sumiya (217) for the same reasons set forth in the previous office action which are incorporated herein by reference.

(5) Claims 1, 3-4, 6-11 and 15-20 are rejected under 35 U.S.C. 103(a) as obvious over Yoshida et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

(6) Claims 1-3, 4, 6, 10-11 and 15-20 are rejected under 35 U.S.C. 103(a) as obvious over Nakai et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

Art Unit: 1755

(7) Claims 1-10 and 16-20 are rejected under 35 U.S.C. 103(a) as obvious over JP 2-30667 for the same reasons set forth in the previous office action which are incorporated herein by reference.

(8) Claims 1-11 and 15-20 are rejected under 35 U.S.C. 103(a) as obvious over Cerutti for the same reasons set forth in the previous office action which are incorporated herein by reference.

(9) Claims 1-20 are rejected under 35 U.S.C. 103(a) as obvious over Hall et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

(10) Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as obvious over Akashi et al., applied to claim 1 above and in view of Cerutti for the same reasons set forth in the previous office action which are incorporated herein by reference.

(11) Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as obvious over JP 2-30667, applied to claim 1 above and in view of Cerutti for the same reasons set forth in the previous office action which are incorporated herein by reference.

(12) Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as obvious over Sumiya et al. (217), applied to claim 1 above and in view of Cerutti for the same reasons set forth in the previous office action which are incorporated herein by reference.

(13) Claims 12-14 are rejected under 35 U.S.C. 103(a) as obvious over *either* (1) Cerutti as applied to claim 11 above, (2) Akashi et al. in view of Cerutti as applied to claim 11 above, (3) JP 2-30667 in view of Cerutti as applied to claim 11 above, (4) Sumiya et al. (217) in view of Cerutti as applied to claim 11 above or (5) Yoshida et al. as applied to claim 11 above all in

view of Phaal et al. and Wentorf, Jr. et al. for the same reasons set forth in the previous office action which are incorporated herein by reference.

Applicant's arguments filed 10/13/05 have been fully considered but they are not persuasive.

Applicants argue the disclosure objection (as previously defined in the last office action) on page 8 of the response in that the amendments to the claims resolve this issue. Although the amendments to the claims might be clear, the disclosure is still objected to because of the way it is drafted (see previous office action) and applicants have not corrected the informalities (in the disclosure), as addressed by the examiner.

On page 10 of the response applicants state that the examiners interpretation made in the last office action is inaccurate. Applicant states that "carbon" means "carbon" and not "diamond". However, in the 2 sentences following this statement, applicant states that carbon exists as nanodiamond and thus it appears that applicant's remarks are contradicting one another. The examiners position on the interpretation of carbon to mean diamond is clear from the claims because the claims state that greater than about 95% of the mass (carbon) is in the form of nanodiamond (i.e. all of the carbon in the claims can be nanodiamond, thus the examiner interpretation of the claims is correct).

Applicant appears to argue that the amended language "consisting essentially of" and "substantially free of no diamond constituents" intends to exclude sintering aids and any non carbon material in more than trace amounts and thus only inevitable impurities are intended to be allowed by the claims. The examiner disagrees because (1) consisting essentially only excludes components that would materially effect the basic and novel properties of the claimed invention

Art Unit: 1755

and (2) applicant has not clearly defined what is meant by “substantially free of” (i.e. what is the value). For “consisting essentially of” applicant is required to show evidence that a sintering aid will materially effect the basic and novel properties of the claimed invention and for “substantially free of” applicant is required to show that any small amount of additive used by the references is not within the scope of the “essentially free of” limitation.

With respect to Akashi et al., Phaal et al., Wentorf, Jr. et al., Nakai et al., Sumiya et al., Yoshida et al., applicant argues that these references include a sintering aid and thus do not suggest a nanodiamond article which does not include a sintering aid or other non carbon constituent. This is not persuasive for the following reasons.

(1) Akashi et al. states that any additive is optional (column 8, lines 18).

(2) Phaal et al. states in column 2, lines 56-65 that the mass and layer may also contain a second phase (catalyst (i.e. cobalt, etc.)) and the term “may” implies that this is an optional component (the term “may” does not definitely define that the catalyst is present), and thus it is the examiners position that absent the catalyst for diamond, the mass can be 100 percent diamond. In other words, the limitation diamond and “may also contain a catalyst” when used in the method implies that the mass is 100% diamond because the catalyst does not have to be present. In addition, as can be seen from claim 1 of the reference no catalyst is present.

(3) Wentorf, Jr et al. shows in claim 1 that no catalyst is present. In addition, the reference clearly teaches a diamond content of 99+% and assuming arguendo about the sintering aid, this is still within the scope of the claims because (1) applicant has not clearly shown that this component will materially effect the basic and novel properties of the claimed invention and

Art Unit: 1755

(2) applicant has not shown that this small amount of additive used by the reference is not within the scope of the “essentially free of” limitation.

(4) Although Nakai et al. uses a sintering aid, this is still within the scope of the claims because (1) applicant has not clearly shown that this component will materially effect the basic and novel properties of the claimed invention and (2) applicant has not shown that this small amount of additive used by the reference is not within the scope of the “essentially free of” limitation.

(5) Although Sumiya et al (217) uses a sintering aid (0.1%), this is still within the scope of the claims because (1) applicant has not clearly shown that this component will materially effect the basic and novel properties of the claimed invention and (2) applicant has not shown that this small amount of additive used by the reference is not within the scope of the “essentially free of” limitation.

(6) Although Yoshida et al. uses a sintering aid (diamond content is 99 volume percent), this is still within the scope of the claims because (1) applicant has not clearly shown that this component will materially effect the basic and novel properties of the claimed invention and (2) applicant has not shown that this small amount of additive used by the reference is not within the scope of the “essentially free of” limitation.

Applicant argues that JP 2-30667 does not teach or suggest a sintered mass comprising at least about 98 volume percent carbon. The examiner disagrees because the entire mass is made of diamond and since diamond broadly reads on carbon and applicant has not designated the form of carbon (other than the nanodiamond required), no distinction is seen to exist because diamond, which encompasses carbon is the entire mass of the article according to the reference.

Art Unit: 1755

Applicant appears to state that the carbon content can only be as high as the diamond content and rely of the reference teaching of 95% volume percent carbon (apparently part (A) of the mixture o the reference) as implying that the mass can only contain 95 volume percent carbon. Applicant fails to appreciate part (B) of the reference which implies that the balance of the mixture is also diamond, thus a 100 volume percent diamond (carbon) mass is apparent. Applicant also argues the “about” limitation as defined in the previous office action, the examiner acknowledges this, but withdraws the comments based on this and relies only on the teaching that the mass can be 100 volume percent diamond, as clear from the abstract.

Applicant argues that Cerutti does not teach a sintered mass consisting essentially of carbon and is substantially free of non carbon materials. The examiner disagrees because the reference states that a catalyst is an optional component, and thus it is the examiners position that absent the catalyst for diamond, the mass can be 100 percent diamond (self sintered) and broadly occupy more than 98 volume percent of the mass absent evidence to the contrary. In other words, the limitation diamond and “optionally a catalyst” when used in the method implies that the mass is 100% diamond because the catalyst does not have to be present. In addition and assuming arguendo about the sintering aid, this is still within the scope of the claims because (1) applicant has not clearly shown that this component will materially effect the basic and novel properties of the claimed invention and (2) applicant has not shown that this small amount of additive used by the reference is not within the scope of the “essentially free of” limitation.

Applicant argues that Hall et al. clearly teaches a cobalt sintered PCD having a copper content, however, applicant points to no disclosure of this in the reference (no disclosure or copper content). It is argued that regardless of the method, this reference teaches a cobalt

Art Unit: 1755

sintered diamond. The examiner acknowledges that some of the layers can be cobalt sintered diamond, however, the reference clearly teaches that that the mass (first layer) comprises 100 volume percent thus reading on claim 1 (see column 4, line 24). Since the reference teaches an article that comprises a mass of 100 volume percent diamond of the claimed size (column 7, line 22), no distinction is seen to exist. In summary, the first layer can be **only** diamond (as can be seen from claim 1 of the reference-**no** catalyst is present) and thus an article **comprising** a mass of sintered nanodiamonds is met.

With respect to the combination of Akashi et al., JP 2-30667 or Sumiya et al. (217) **all** in view of Cerutti, applicant appears to be arguing these references individually and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant has not fully addressed the examiner reasons for combining and present no evidence that said combination is improper. The examiner has fully addressed applicant's remarks on these individual references (see above). A mere statement that the references do teach the combination without any specific arguments is not sufficient to overcome the rejections. With respect to any argument based on the size, the references clearly teach submicron (i.e. encompasses nanometer) sizes.

With respect to the rejection NUMBER 13 above, applicant has not properly argued this rejection and therefore no further comment is necessary.

Applicant's amendment necessitated the new ground(s) of rejection (new indefinite rejection) presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

A reference is good not only for what it teaches but also for what one of ordinary skill might reasonably infer from the teachings. *In re Opprecht* 12 USPQ 2d 1235, 1236 (CAFC 1989); *In re Bode* USPQ 12; *In re Lamberti* 192 USPQ 278; *In re Bozek* 163 USPQ 545, 549 (CCPA 1969); *In re Van Mater* 144 USPQ 421; *In re Jacoby* 135 USPQ 317; *In re LeGrice* 133 USPQ 365; *In re Preda* 159 USPQ 342 (CCPA 1968). In addition, "A reference can be used for all it realistically teaches and is not limited to the disclosure in its preferred embodiments" See *In re Van Marter*, 144 USPQ 421.

A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971).

Art Unit: 1755

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549; *In re Wertheim* 191 USPQ 90 (CCPA 1976).

Applicants use process limitations to define the product and "product-by-process" claims do not patentably distinguish the product even though made by a different process. *In re Thorpe* 227 USPQ 964.

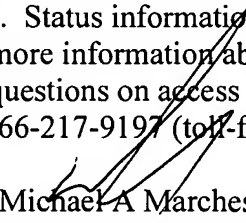
Evidence of unexpected results must be clear and convincing. *In re Lohr* 137 USPQ 548. Evidence of unexpected results must be commensurate in scope with the subject matter claimed. *In re Linder* 173 USPQ 356.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-12331233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/05
MM


Michael A Marcheschi
Primary Examiner
Art Unit 1755